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ABSTRACT

An experiment in which students in an introductory accounting class took turns acting as teacher by giving presentations on accounting problems before the class produced mixed results. The majority of students benefited from the public speaking experience and a few may have learned the subject matter better as a result of it. In the study all students continued to be responsible for all the assigned homework problems but the oral analysis of the simpler problems was assigned to students on a rotating basis. The student in charge also had to answer questions from other students and the teacher. Other accounting classes taught during the same semester were used for comparison. Observation indicated that most students did their best and received cooperation from fellow students. Analysis of grades on the first exam indicated that the experimental class did significantly better than the control class. However, the experimental class also had significantly higher high school grades. A questionnaire administered to the students indicated some enthusiasm for the experiment and no evidence of negative impact, but also no clear-cut results. (IS)

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"THE CONTRIBUTION OF REQUIRED STUDENT PARTICIPATION IN CLASS TO THE LEARNING PROCESS"
An Experiment in Teaching Effectiveness

by

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Associate Professor

SP 016202

Paper presented at the Annual Meeting of the Eastern Economic Association (New York, NY, March 16, 1984).

"THE CONTRIBUTION of REQUIRED STUDENT
PARTICIPATION IN CLASS TO THE LEARNING PROCESS"
An Experiment in Teaching Effectiveness

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Accounting principles courses have been taught, for the most part, using one general format. The teacher lectures on certain material, presents a few examples (hopefully eliciting some responses from the students), and then assigns a few problems for homework. The rationale here is that the students, in attempting to solve the problems, will "learn by doing." The instructor will discuss the assignment during the next class meeting, calling on the students from time to time. Using this method, the teacher expects to find out if the students understand the subject matter and, for those who do not, he believes that by going over the problems the hazy parts will be cleared up for the unsure students. The foregoing procedure had been the one used by this researcher in his first semester of teaching (just completed at the point of experiment).

But can the old, accepted stand-by approach be improved? Although it is felt that, in accounting subjects, one of the best ways for the student to learn is by doing, it is certainly not clear that it is the only way. This researcher, having spent a number of years as a professional accountant in the business community prior to entering college teaching, believes that knowledge of the subject matter is not the sole requirement for success in our competitive society. Personality and the ability to communicate are also vitally important. Accountants must be able to communicate, verbally as well as in writing. The procedures described in the following paragraphs were devised to provide an opportunity for students to develop their verbal communication skills while also, hopefully, improving their understanding of the course material.

The idea was to continue the same basic procedure that had been followed in the past, but with a touch of public speaking added to it. When homework assignments

were given, each of the problems would be assigned to a specific student. (It should be noted that the shorter, less complicated problems were the ones assigned to the students; the longer, more involved problems were reviewed by the instructor.) Thus, although all students would be responsible for all the problems, a specific problem would receive special attention by one student. The selection of students would be on a rotational basis so that every pupil would take a turn (each presentation would only last a few minutes). In the next class period, each student having a specific problem would come to the front of the class and give his (or her) presentation. He would also have to be prepared to answer any questions not only from his peers but also from the instructor. In effect, the student would become the teacher for that problem. Obviously, the instructor would bail the student out if he were asked a question he could not answer or if he started out in the wrong direction.

It was hoped that two major objectives would be accomplished with this experiment: one, give each student an opportunity to stand up in front of his peers and gain some experience in talking to a group; and two, improve the students' understanding of the material. It was anticipated that other results might develop from this. Would interest in the class as a whole improve, leading perhaps to better attendance? Would the quiet, shy student become a little more aggressive and participate more in class discussions? Only time would tell.

While many of the answers to these questions would be learned only through observation, the intent was also to pass out a questionnaire after at least one major exam and after each student had had two opportunities to present a problem to the class. This questionnaire would hopefully provide additional feedback as to what the students were thinking.

When the class was informed (actually there were three classes totaling approximately eighty students) of the "student teaching" approach, the reaction was not unexpected. There were a few moans and groans, a few laughs, a few facial contortions, and a few who neither said nor did anything. But not one pupil

- at least initially- objected, either during class or outside the classroom. It is felt that this was significant. This researcher believed he had a good rapport with his students and, if they did not like something, they would let him know about it. Therefore, the assumption was (hopefully not too naively) that each one of the students secretly felt that the idea was a good one, or at least one worth attempting.

The reason for the idea was explained to them: an attempt to give them some experience in talking before a group, a factor which would help them after college, no matter what job they were in. In addition, it was mentioned that hopefully it would make the course more interesting, assist them in learning the material, and possibly result in better test scores.

It should also be noted that there were two other classes of accounting principles (approximately forty students) being taught by another teacher. The latter was not using the "student teaching" approach at all in his classes. However, all five accounting classes would be taking the same exams on the same day at the same time at the same place. While it is true that no real correlation could be obtained since a real control group did not exist, it was felt that there would be some basis for comparison.

During the first few days of student teaching, the students were tense and the atmosphere in the classroom was strained. It did not take long, though, before all concerned were more relaxed and were asking the student teachers the questions they would normally have asked the instructor. The student teachers were, for the most part, well prepared.

"Volunteers" had to be selected during the first few days, but this hesitancy on the part of the student also faded with time. There even seemed to be some enthusiasm when requests for volunteers were solicited.

This researcher was interested in watching not only the student teachers but also in observing the reaction of the class to each presentation. Out of the eighty-some students, there must have been nearly that many different presentations. The students were all probably nervous, but that was to be expected. Some showed

their nervousness more than others while a few did not appear nervous at all. Some of the students that this researcher thought would be the most nervous, did not appear to be. Some that were expected to have little or no difficulties, showed extreme nervousness. Some of the pupils would half-address the instructor rather than the class (the instructor was sitting at the front of the room off to one side), while others faced the class directly. But for the most part they all approached their task as a serious endeavor and did their best. A few used a little humor, to which there was no objection. No attempt was made to stifle any approach presented. Suggestions were offered by the instructor from time to time in order to help out those who needed some assistance, but in general the students were on their own. The audience was helpful, too. They worked with the person giving the presentation, not against him or her. They did not sit back and watch; they asked questions. In short, the students made the presentations successful.

One student's method was particularly humorous as well as effective. This individual was one of the first few students selected. Prior to his presentation the mood had been extremely serious: the student teacher would read the problem, solve it, answer any questions, and then sit down. Then this fellow walked up to the front of the room without his book, turned, and asked another student to read the problem. This responder was completely caught off guard with the unexpected approach. The rest of the class was slightly taken aback also. As soon as the problem had been read aloud, the student teacher went to the blackboard, took a piece of chalk, turned, and asked the same student who had read the problem what had been his first step in solving the problem. This really stunned the student asked as well as the rest of the class. The student told the student teacher his first step and the latter proceeded from there, explaining the rationale behind the solution as he completed the problem. There were no questions and he sat down. Needless to say, this researcher was very pleased: one student had truly assumed the role of the teacher.

During the first few weeks class attendance seemed very good. It was not

evident at this time whether interest had picked up or not. In an occasional informal discussion with students, the consensus seemed to be that the idea was working out well. But there was still nothing definitive to back up the premise of this experiment.

Then came the first reasonably objective measurement: the departmental examination. As was indicated earlier, all of this researcher's students as well as the other teacher's students would be taking the same exam on the same day at the same time at the same place. The two instructors had prepared the exam and the answer key. Steps had also been taken to break down every answer for partial credit points.

After the exams had been given and corrected, the results were as follows:

EXPERIMENTAL CLASSES	AVERAGE MARK
1	80.2%
2	76.3
3	78.7
Total average	78.4%

OTHER CLASSES	AVERAGE MARK
1	70.7%
2	73.0
Total Average	71.6%

Needless to say, this researcher was slightly amazed at the difference in class average, but not so naive as to believe that student teaching alone produced these sorts of results. The two instructors compared notes as to the grading of the exams and could find no major discrepancies; after all, the same answer key had been used by both. Other possibilities as to why the experimental classes should have averaged higher than the others were discussed. For one thing, although both instructors had worked as professional accountants prior to teaching, and had agreed on what was of basic importance regarding fundamental accounting concepts, each had his own techniques and approaches to teaching. Also, the experimental classes met three times a week for fifty minutes each; the other classes met twice a week

for seventy-five minutes each. In order to assess the "quality" of the students, a questionnaire was distributed to all students taking principles of accounting (see Exhibit A). Some basic background information regarding their high school careers and what they had experienced so far at the college level was desired. The results of the poll are indicated on Exhibits B and C.

To briefly summarize the results of the survey, it would appear that the "better" (using that term for lack of another) students were in the experimental classes. Over half of this researcher's students had a high school average above 85%; less than 25% of the other teacher's pupils fell into this category. Slightly more than 30% of the experimental students were in the upper fifth of their high school class; only a shade over 25% of the others were in this range. Also, over 11% of the experimental students were in the upper 5% of their high school class while none of the other students attained this level. Less than 20% of the other students had a cumulative index over 2.75 last semester; nearly 40% of the experimental group were in that category. As further emphasis, it might be added that over 17% of the experimental pupils had over a 3.3 cumulative index; only a little more than 6% of the other instructor's students were in this range. Finally, as to the difficulty of university studies, over 15% of the experimental students felt that studies were "easy" or "real easy"; only 3% of the other students felt this way.

As a result of these figures, it was concluded that perhaps the experimental students (on the average) were more apt to do better than the other teacher's students. It was not felt that more could be said with any degree of accuracy. At this stage, therefore, it was not clear if the student teaching idea had had a positive impact on the student. Of course, it was believed that the experiment had not hurt their studies and that they had had some experience in public speaking.

It should be pointed out that two students did not like the approach. In an informal discussion, these students indicated that they felt that some pupils were not learning the material as well from the student teachers. When asked why, the

response was that they felt that it would be embarassing to the student teacher to ask him a question he could not answer. So, all students were not reacting to student teaching in the same way!

Everyone had had two chances to give a presentation in front of the class. All of the experimental students had had time to evaluate the program. The time was ripe for the evaluative questionnaire (see Exhibit D). When the survey was passed out, the students were asked to be as honest and straight-forward as possible; based upon the results, it appears as though they were.

A few of the responses were more-or-less as expected and those that were not turned out to be both surprising and revealing. This researcher discovered that he did not know his students as well as he had thought! A simple numerical summary of the answers received is shown in Exhibit E. In the following paragraph, the responses to each question or group of questions will be discussed and evaluated.

The first question asked whether or not the students liked accounting. The reasoning was to set the scene, to see how many students actually liked the course to begin with; after all, all business majors must take principles of accounting so we were not dealing with just accounting majors. Of the twenty pupils who said they did not like accounting, most of them complained that there was too much homework which took up too much of their time. A few found accounting just plain boring. It is interesting to note that almost half of the students who did not like accounting found it to be more interesting with the advent of student teaching (question two). Some of these students said it prepared them better while others said it added an air of excitement.

Almost half of all students found the course to be more interesting after student teaching. They felt thay they had to prepare better, which in turn led to a better understanding of the subject matter. They also liked the differing viewpoints of their fellows who had a chance to exhibit their skills. The major objections of those who found the course less interesting were that students could not explain the problems adequately, that the time could be spent better with the

teacher lecturing, and that it was more difficult to pay attention to the student teachers.

A few students were "eager" when they found out they would have to teach the class (question three), but "it did not matter" to most of them. Some "did not like the idea" and one of these students remarked, "I was sort of surprised and a little scared, but the fear passed and I survived the teaching experience." However, out of the eighteen students who were not happy about teaching, nine of them did not mind it after having actually participated (question four). Of further significance in question four is the fact that 80% of all students indicated that they felt the teaching aspect was "good," in one way or another. It should be noted that the actual numerical results to question four do not tell much, if anything, since the answers depended on what was said in question three, a question that had possible positive and negative responses; the comments gave the necessary insight. Question eight added extra emphasis by revealing that 88% of all students did not mind teaching the second time as much as the first.

Questions five and six did not provide significant information either. One asked whether or not student teaching helped the student to understand the subject matter and the other queried if the student felt he or she spent more time preparing for class since the advent of student teaching. In both cases there were about the same number of "yes" answers as "no" answers. Thus approximately half the class felt that they did gain some benefit from the approach.

Question seven's responses were perhaps the most disappointing. When asked if the pupil felt he or she participated more in class since student teaching than before, 78% said "no". But, again, there were some that had participated more. This researcher's personal observations of the students seemed to indicate that participation had picked up a little; the questionnaire somewhat substantiated this.

When the students were asked if they would like to see the student teaching continued for the rest of the semester (question nine), 65% said "yes," either "for everyone" (29%) or "on a voluntary basis" (36%). Of course, it could be argued that

71% would not want it mandatory (35% "no" plus 36% "voluntary basis"). Question ten asked if they felt student teaching should be used in all future principles of accounting courses and 61% said "yes." It is noteworthy that every student who said "for everyone" in question nine said "yes" in ten, but only about half of those who said "on a volunteer basis" in nine said "yes" in ten. Apparently those that felt student teaching should be continued this semester on a volunteer basis were not convinced about its value in future courses, voluntarily or otherwise. This was a little puzzling. Only one student who checked "not at all" for nine said "yes" in ten, and he qualified that by commenting that it should only be used for a "short duration." To summarize, then, most of the students thought student teaching would be beneficial for future courses, but about half of them did not want it continued this semester unless it was on a volunteer basis! Apparently they concluded that they had received everything from the program that they could. (We will see later what kind of comments were made regarding this type of thinking.)

Only one student did not think it was important to be able to get up in front of a group (question eleven) and he tempered his answer by saying that one "might need to do it someday, but then again we're not all business majors!" All the other students recognized its importance in almost all walks of life.

The response to question twelve was not as good as had been expected: only 65% of the students believed this course helped them in the area of public speaking. There was some consolation, though, in that a number of those who said they did not think the course helped them had already had a public speaking course. Some pupils indicated that the two times each student was in front of the class were not really enough to do much good. On the whole, however, it can be said that the majority did receive some benefit from student teaching.

The last part of the questionnaire was reserved for "any other comments" the students might have had. A number of their suggestions are worth mentioning; for the most part, the comments fell into categorical groups. A number of students felt that student teaching should only be assigned to volunteers; they felt this would result in better explanations since some of the students would only give the bare

minimum just so they could get their assignments completed. Other students felt that student teaching should be left for public speaking courses since the students wasted too much valuable class time. Still others believed that the students were not well versed or skillful enough to "teach"--that job should be reserved for the teacher, period! In this same light, others remarked that they did not want to put their friends "on the spot" by asking them questions which they might not be able to answer. (They were not at all worried about putting the instructor on the spot!)

Many were quite frank and indicated that they were prone to put out less effort on the homework if they knew another student would be doing it on the blackboard; they could just copy it down in class as the student teacher reviewed it. These students were also honest enough to admit that they realized doing the homework was important, but they needed "a little prodding."

A good number re-emphasized the fact that they felt getting up in front of the class was good experience. A few of these pupils thought it helped them to learn accounting better, a few said it didn't appear to have any effect on their learning, and some said it hindered the learning process because the students did not stress the important facts.

There were a few staunch supporters who said student teaching helped them learn through their mistakes and therefore it should be continued. Others also believed that they definitely came to class better prepared.

Conclusion

This researcher was extremely pleased with the sincerity in which the students responded to this survey: good and bad criticisms alike. Without this genuine interest on the part of the students, it would not have been possible to evaluate the program meaningfully.

After digesting the information from the survey along with other considerations, such as personal observations and informal discussions with students, the conclusion derived was that the majority of the students benefitted from student teaching from a public speaking experience standpoint and a few may have learned the subject matter

EXHIBIT A

11

ACCOUNTING 102

SURVEY QUESTIONNAIRE

1. Please do NOT put your name on this paper.

2. High School Background:

(a) High School Average (Check one)

70 - 74%	_____
75 - 79%	_____
80 - 84%	_____
85 - 89%	_____
90 - 94%	_____
95 - 100%	_____

(b) Rank in High School Class (Check one)

Lower	50%	_____
Upper	50%	_____
Upper	25%	_____
Upper	20%	_____
Upper	10%	_____
Upper	5%	_____

3. University Background:

(a) Cumulative index last semester (Check one)

Below 2.5	_____
Above 2.5	_____
Above 2.75	_____
Above 3.0	_____
Above 3.3	_____

(b) Do you find university studies (Check one)

Real easy?	_____
Easy?	_____
What you expected	_____
Difficult?	_____
Very difficult?	_____

EXHIBIT B - Experimental Students

ACCOUNTING 102

SURVEY QUESTIONNAIRE

1. Please do NOT put your name on this paper.

2. High School Background:

(a) High School Average (Check one)

70 - 74%	1	1.3%
75 - 79%	12	15.2%
80 - 84%	26	32.9%
85 - 89%	26	32.9%
90 - 94%	13	16.4%
95 - 100%	1	1.3%
	79	100.0%

(b) Rank in High School Class (Check one)

Lower 50%	14	17.7%
Upper 50%	28	35.4%
Upper 25%	11	13.9%
Upper 20%	10	12.7%
Upper 10%	7	8.9%
Upper 5%	9	11.4%
	79	100.0%

3. University Background:

(a) Cumulative index last semester (Check one)

Below 2.5	34	43.0%
Above 2.5	14	17.7%
Above 2.75	7	8.9%
Above 3.0	10	12.7%
Above 3.3	14	17.7%
	79	100.0%

(b) Do you find university studies (Check one)

Real easy?	2	2.6%
Easy?	11	13.9%
What you expected	37	46.8%
Difficult?	24	30.4%
Very difficult?	5	6.3%
	79	100.0%

EXHIBIT C - Other Students

13

ACCOUNTING 102

SURVEY QUESTIONNAIRE

1. Please do NOT put your name on this paper.

2. High School Background:

(a) High School Average (Check one)

70 - 74%	0	0.0
75 - 79%	8	25.8%
80 - 84%	16	51.6%
85 - 89%	6	19.4%
90 - 94%	1	3.2%
95 - 100%	0	0.0%
	31	100.0%

(b) Rank in High School Class (Check one)

Lower 50%	6	19.4%
Upper 50%	11	35.4%
Upper 25%	6	19.4%
Upper 20%	7	22.6%
Upper 10%	1	3.2%
Upper 5%	0	0.0%
	31	100.0%

3. University Background:

(a) Cumulative index last semester (Check one)

Below 2.5	18	58.1%
Above 2.5	5	16.1%
Above 2.75	4	12.9%
Above 3.0	0	0.0%
Above 3.3	2	6.5%
Transfer	1	3.2%
Part-Time	1	3.2%
	31	100.0%

(b) Do you find university studies (Check one)

Real easy?	0	0.0%
Easy?	1	3.2%
What you expected	19	61.3%
Difficult?	9	29.0%
Very difficult?	2	6.5%
	31	100.0%

EXHIBIT D

14

ACCOUNTING 102

EVALUATION QUESTIONNAIRE p. 1 of 2

A. Please do NOT put your name on these pages.

B. The questions in this survey concern Accounting 102 in general and the "student teaching" aspect (which was instituted this semester) in particular.

C. Please answer all the following questions, supplying comments where you feel they would be appropriate.

1. Do you like accounting? Yes _____ No _____
   Why or why not?

2. Have you found the course to be more ___ or less ___ interesting since the advent of "student teaching?" Please comment why.

3. What was your initial reaction when you found out you would have to "teach" the class?
   Eager _____
   Didn't matter _____
   Didn't like the idea _____
   Other reactions:

4. As to question #3, do you still feel the same way after having participated? Yes ____ No ____
   (a) If so, why?

   (b) If not, how do you feel about it now?

5. Do you honestly feel that the student teaching program has helped you to better understand the subject matter? Yes ____ No ____

6. Do you find yourself spending more time preparing for class now than you did prior to student teaching? Yes ____ No ____

7. Do you think you participate and ask more questions in class now than you did before student teaching? Yes ____ No ____

8. Did you mind teaching the second time as much as the first time?
   Yes ____ No ____

9. Would you like to see student teaching continue for the rest of the semester?
   For everyone ___
   Only on a volunteer basis ___
   Not at all ___

   Other reactions:

10. Do you think student teaching should be used in all future Accounting 102 courses? Yes ____ No ____

11. Do you think it is important to be able to get up in front of people and be able to give a speech or explain a topic? Yes ___ No ___

12. Do you believe this course had helped you at all in regards to question #11? Yes ____ No ____

13. Give any other comments you may have relative to accounting or student teaching.

Thank you for your participation and interest.

EXHIBIT E

16

ACCOUNTING 102

EVALUATION QUESTIONNAIRE p. 1 of 2

A. Please do NOT put your name on these pages.

B. The questions in this survey concern Accounting 102 in general and the "student teaching" aspect (which was instituted this semester) in particular.

C. Please answer all the following questions, supplying comments where you feel they would be appropriate.

1. Do you like accounting? Yes 55 No 20
   Why or why not?

2. Have you found the course to be more 35 or less 27 interesting since the advent of "student teaching?" Please comment why.
   SAME 12 NO RESPONSE 1

3. What was your initial reaction when you found out you would have to "teach" the class?
   Eager 7
   Didn't matter 43
   Didn't like the idea 18
   Other reactions: 7

4. As to question #3, do you still feel the same way after having participated? Yes 52 No 23
   (a) If so, why?
   (b) If not, how do you feel about it now?

5. Do you honestly feel that the student teaching program has helped you to better understand the subject matter? Yes 34 No 41

6. Do you find yourself spending more time preparing for class now than you did prior to student teaching? Yes 37 No 36 SAME 2

7. Do you think you participate and ask more questions in class now than you did before student teaching? Yes 15 No 59 SAME 1

8. Did you mind teaching the second time as much as the first time?
   Yes 7 No 66 SAME 1 NOT SURE 1

9. Would you like to see student teaching continue for the rest of the semester?
   For everyone 22
   Only on a volunteer basis 27
   Not at all 18
   Other reactions: 8

10. Do you think student teaching should be used in all future Accounting 102 courses? Yes 46 No 21 other 8

11. Do you think it is important to be able to get up in front of people and be able to give a speech or explain a topic? Yes 74 No 1

12. Do you believe this course had helped you at all in regards to question #11? Yes 46 No 29

13. Give any other comments you may have relative to accounting or student teaching.

Thank you for your participation and interest.